Commonwealth Edison Company

Chicago, Illinois Phase I Environmental Site Assessment of Commonwealth Edison Crawford Generating Station 3501 S. Pulaski Road Chicago, Illinois.

ENSR Consulting – Engineering – Remediation

October 1998

Document Number 1801-023-100

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1.0 INTRODUCTION

1.1 Objectives and Scope of Work

ENSR was retained by Commonwealth Edison (Com Ed) to perform a Phase I environmental site assessment evaluation of the Crawford Generating Station facility located at 3501 Pulaski Road in Chicago, Illinois.

The purpose of this Phase I ESA was to assess the environmental status of the subject site with regard to "recognized environmental conditions," which are defined by the ASTM (see E 1527-97) as, "the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum

products into structures on the property or into the ground, groundwater, or surface water of the property." According to the ASTM, "the term is not intended to include *de minimis* conditions that generally do not present a material risk of harm to public health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies."

The ESA was conducted in accordance with the Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process established by the ASTM (ASTM Designation E.1527-97).

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1.2 Study Limitations

This report describes the results of ENSR's initial due diligence investigation to identify the presence of recognized environmental conditions affecting the subject facility and/or property. In the conduct of this due diligence investigation, ENSR has attempted to independently assess the presence of such problems within the limits of the established scope of work, as described in ENSR's July 31, 1998 proposal.

As with any due diligence evaluation, there is a certain degree of dependence upon oral information provided by facility or site representatives which is not readily verifiable through visual inspection or supported by any available written documentation. ENSR shall not be held responsible for conditions or consequences arising from relevant facts that were misconstrued, concealed, withheld, or not fully disclosed by facility or site representatives at the time this investigation was performed.

This report and all field data and notes were gathered and/or prepared by ENSR in accordance with the agreed upon scope of work and generally accepted engineering and scientific practice in effect at the time of ENSR's investigation of the site.

This report, including all supporting field data and notes (collectively referred to hereinafter as "information"), was prepared or collected by ENSR for the benefit of its Client, ComEd. ENSR's Client may release the information to other third parties, whom may use and rely upon the information to the same extent as ENSR's Client. However, any use of or reliance upon the information by a party other than specifically named above shall be solely at the risk of such third party and without legal recourse against ENSR, its parent or its subsidiaries and affiliates, or their respective employees, officers or directors, regardless of whether the action in which recovery of damages is sought is based upon contract, tort (including the sole, concurrent or other negligence and strict liability of ENSR), statute or otherwise. This information shall not be used or relied upon by a party that does not agree to be bound by the above statement.

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1.3 Report Organization

ENSR reviewed a substantial volume of information regarding the ComEd facility during the course of this environmental due diligence investigation. This report represents our best efforts to synthesize the most salient information collected and reviewed. The report contains the following sections:

- *Chapter 2: Site Location and Description*, provides an overview of the subject property, including a description of the site history and a discussion of the various activities currently taking place.

- *Chapter 3: Environmental Document Review*, provides a description of ComEd's documents reviewed at each facility and at ComEd's corporate office. The document review included only materials that pertained to site contamination and not documents regarding environmental regulatory compliance.

- *Chapter 4: On-Site Contamination*, evaluates the subject property for the presence of a hazardous material or petroleum hydrocarbon contamination problem due to past or present activities taking place on the site. This analysis also considers land uses in the immediate vicinity that may adversely affect the subject property through off-site migration of contaminants from known releases.

- *Chapter 5: Summary of Findings*, provides our summary regarding recognized environmental conditions.

- *Chapter 6: References*, identifies the various sources of information used in the preparation of this report, including persons interviewed, and documents and files evaluated.

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2.0 SITE LOCATION AND DESCRIPTION

2.1 Site Location

ComEd's Crawford station facility operates as a coal-fired, electric power generating facility located at 3501 S. Pulaski Road in Chicago, Illinois. The subject property is located at the northeast corner of Pulaski Road and the Chicago Sanitary & Ship Canal in Chicago, Illinois.

The subject property is bordered to the north by W. 33rd Street, beyond which is a vacant industrial building and a residential area. To the east is S. Hamlin Avenue, beyond which is a portion of land owned by ComEd and leased to a trucking firm for the storage of shipping containers, the City of Chicago Sorting Center, and Powell Roofing Contractors. To the south is the Chicago Sanitary & Ship Canal, beyond which is Reliable Asphalt

Company; and to the west is Pulaski Road, beyond which is a ComEd switchyard and the Highway Freight Center. The ComEd switchyards located west and south of the main generating building were not included as a part of this environmental assessment. Figure 2-1 is a site location map.

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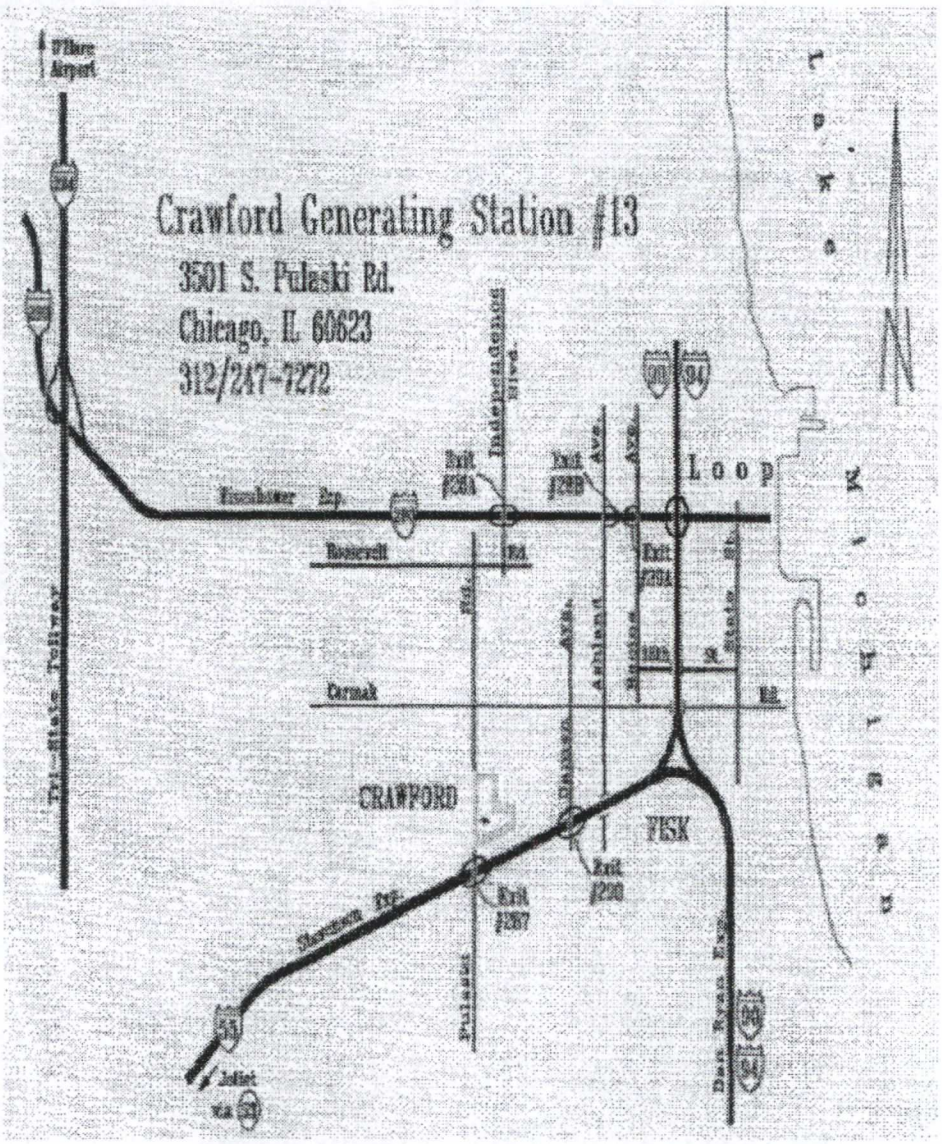
2.2 Description of Property and Facility Layout

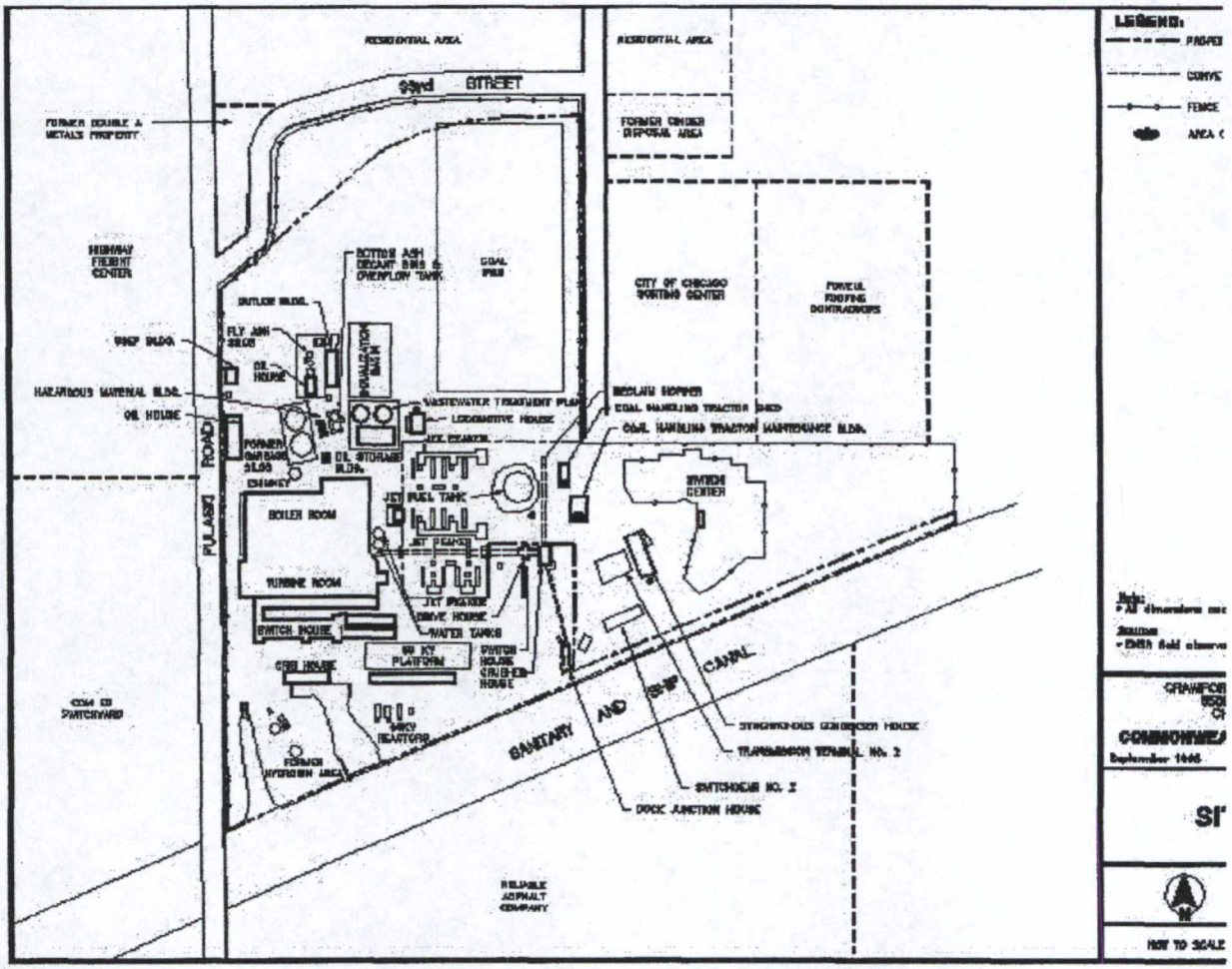
The subject property encompasses approximately 80 acres of land and is occupied by the main generating building and several ancillary buildings and structures. Figure 2-2 is a site plan for the facility.

The main generating building, located on the southwest portion of the subject property, contains the boiler room, turbine room, and switch house No. 1. The boiler room contains boiler Units 5, 6, 7 and 8. Units 5 and 6 were decommissioned in the early 1970s and Units 7 and 8 are still currently active. Unit 7 has a generating capacity of 234 megawatts and Unit 8 has a generating capacity of 347 megawatts. The turbine room contains two turbines. The switch house contains some obsolete switching gear that was retired after a fire in the early 1980s.

The crib house is located directly south of the switch house and is located on the banks of the Chicago Sanitary & Ship Canal. The building strains cooling water at the intake from the canal prior to being pumped into the plant.

The former "hydrobin area", located in the southwest corner of the subject property, was decommissioned in January 1998. The system included two 500,000-gallon water-holding aboveground storage tanks (ASTs) and two hydrobins, each with a capacity of 7,200 cubic feet. These hydrobins and storage tanks are scheduled to be dismantled and removed from the site in 1999.


Crawford Generating Station #13
3501 S. Pulaski Rd.
Chicago, IL 60623
312/247-7272
Loop
CRAWFORD
FISK
Roosevelt
Cermak
Eisenhower Exp.
Dan Ryan Exp.
Stevenson Exp.
Joliet



The 69 kV switchyard is located east of the crib house. The fenced-in area contains several transformers and transmission lines. The 69 kV reactor platforms are located directly south of transmission terminal number 1 and house several obsolete transformers. An old brick storage building is located east of the 69 kV reactor platforms. Two riveted, out-of-service ASTs are located in the basement of the building. The current and/or former contents of the tanks were probably insulating oil.

The barge unloading area is located along the banks of the Chicago Sanitary & Ship Canal in the southeast corner of the subject property. Up to 14 barges can be docked in the unloading area at any one time. The barge-unloading crane has the capacity to unload 900 tons of coal per hour. A dock side conveyor system carries the coal to the dock junction house which is also located along the banks of the Chicago Sanitary & Ship Canal. The coal is then conveyed to the crusher house where it is crushed and conveyed to the boiler house, or conveyed north to the coal pile. The crusher house, and the No. 4 conveyor drive house are all centrally located within the conveying system. Two suspended 275-gallon antifreeze ASTs are located inside the No. 4 conveyor drive house and the 4/5-conveyor junction house, respectively.

A switch gear house is located directly south of the No. 4 conveyor drive house. One 6,000-gallon AST and one 3,000-gallon AST (both of which are currently empty) are located on the south side of the building. These tanks were used for dust suppression chemicals. Additionally, a pad-mounted transformer was observed within a fenced in area on the south side of the building.

The "reclaim hopper" building is located on the north end of the conveyor system. The hopper conveys coal from the coal pile into the crusher house where it is crushed and transferred to the boiler room conveyor system. A 275-gallon antifreeze AST is located on an elevated platform of the reclaim hopper building.

A switch gear building is located between the dock conveyor system and transmission terminal No. 2. The building houses switch gear for consumer transmission.

The former synchronous condenser house is located east of transmission terminal no. 2. Two 30,000-gallon ASTs are located in a vault outside the northeast corner of the building. The basement of the building was flooded, therefore the vault was inaccessible at the time of ENSR's site inspection. An obsolete, pad-mounted transformer is located on the south side of the building. An old metal shed is located on the east side of the building.

The coal-handling tractor shed building is located east of the coal reclaiming hopper. The building stores new and used equipment for coal handling. A 3,900-gallon diesel fuel UST is located on the east side of the building and was reportedly installed in the early 1990s. The tank is used to store fuel for facility vehicles. Additionally, approximately twenty, 55-gallon drums of various new and used oils were observed stored inside the building.

A coal handling tractor maintenance building is located directly southeast of the coal handling tractor shed. Approximately thirty, 55-gallon drums of various oils, lubricants and antifreezes were observed stored in the building. Additionally, a parts washing machine (containing a high flash point solvent) was also observed stored inside the building.

A chemical mix building is located northeast of the equipment storage building. The building contains one 7,500-gallon binder AST, one 7,500-gallon suppressant AST, and one 1,000-gallon surfactant AST. The suppressant and surfactant tanks are currently empty. The chemicals are stored in the tanks and then transferred to tanker trucks and sprayed on the coal pile as a dust suppressant.

An additive house is located west of the equipment storage building. The building contains an approximate 300-gallon AST containing methylcyclopentedienyl which is used as a fuel oil additive. No staining was observed on the concrete floor beneath the AST.

A 750,000-gallon jet fuel oil AST is located northwest of the additive house. The tank is used to store fuel oil for the twelve jet peakers which are

located directly west of the tank. No surface staining was observed around the tank.

A synthetically-lined, oil/water separator pit is located south of the jet peaker area. The separator receives waste water from the fuel oil handling area. The synthetically-lined waste water pit (Pit #9) is located directly northeast of the oil/water separator. The pit receives waste water run off from the oil/water separator prior to it being channeled to the equalization basins.

The former locomotive house is located north of the jet peakers. The building was formerly used to service locomotives which delivered coal to the station.

The wastewater treatment plant is located west of the locomotive house. The plant treats waste water from the two on-site, concrete equalization basins which are located adjacent to the north of the treatment plant. Two 110,000-gallon clarifier tanks are also located north of the treatment plant.

The hazardous material storage building is located directly north of the boiler room. The building is divided into two rooms one used to store used oil and one used to store hazardous chemicals. Approximately fifteen 55-gallon drums of oil-soaked debris and used oil and two, 1,000-gallon used oil ASTs were located in the east room. Hazardous materials stored in the west room included twenty 35-gallon drums of 35% aqueous hydrazine and one 55-gallon drum of aqueous ammonia used for process water treatment.

Two former garbage silos are located adjacent to the west of the hazardous waste storage building. The silos were formerly used in conjunction with a municipal garbage burning operation that was discontinued in 1978-79.

The oil storage building is located west of the former garbage silos. Approximately one hundred, 55-gallon drums of new oil was observed stored in the building.

A butler building is located directly east of the equalization basins. The building is used to store new and used boiler parts.

Two fly ash hoppers and an associated building, owned by MSI, are located west of the butler building. The silos are used to store fly ash prior to off-site shipment.

A fly ash hopper and associated building are located west of the MSI silos. The silo is used by ComEd to store fly ash.

A bottom ash building containing two decant bins and a water tank are located directly east of the garbage silos. The decant bins is used to store wet ash prior to off-site shipment.

The on-site coal storage area is located on the north side of the subject property. The coal storage area has the capacity to store 1,500,000 tons of

coal.

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2.3 Topography, Hydrology, and Geology

According to the USGS Englewood, Illinois Quadrangle 7.5 Minute Series Topographic map, the topographic elevation of the main building is approximately 600 feet above mean sea level.

According to the USDA SCS Soil Survey for Cook County, Illinois, the soils on the subject property consist of mostly built-up areas and deep, nearly level, poorly drained soils that have a silty and clayey subsoil; formed in glacial till. The estimated depth to shallow groundwater is between five and ten feet below grade surface. The regional groundwater is expected to flow toward the Chicago Sanitary & Ship Canal which is located adjacent to the south of the subject property. Bedrock at the site is anticipated to be ranging in depth from 50 to 100 feet below grade.

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2.4 Site History

Historical information for the subject site is based on interviews with site personnel, a review of building department records, tax assessors records, aerial photographs, Sanborn fire insurance maps and a topographic quadrangle map. City directories were not available for review for the subject property area. Assessment records were unavailable for review at the time of ENSR's site inspection.

According to Mr. Fred Veenbaas, Compliance Specialist, the facility began operation in 1923. He indicated that six previous generating units have operated at the site and have been retired. Units 1-4 were completely dismantled in the 1960s and replaced with Units 5-8. Units 5 and 6 were retired in the early 1970s and are still located in the east half of the boiler room. Units 7 and 8 are the only active units on site.

Building department records listed the following permits relating to USTs: Permit No. 755604 was issued on June 25, 1992 for the installation of one 4,000-gallon UST; Permit No. 746850 was issued on November 8, 1991 for the installation of an overspill piping monitoring system; Permit No. 693314 was issued on February 7, 1986 for the removal of one 10,000-gallon H2SO4 tank in a dike; Permit No. 393543 was issued on October 10, 1967 to inspect a 750,000-gallon jet engine fuel tank; Permit No. 120439 was issued on October 19, 1954 for the installation of one 30,000-gallon fuel oil tank; Permit No. 441362 was issued on April 1, 1953 for the replacement of one 2,000-gallon tank with one 1,000-gallon tank and one 3,000-gallon diesel oil tank.

The following UST permits were listed with the Chicago Department of Environment: UST Permit No. 101129 was issued on August 3, 1994 for the removal of one 10,000-gallon tank. The "Site Comments" section

indicated the site was clean with no contamination. UST Permit No. 104110 was issued on July 14 1998 for the removal of one 500-gallon gasoline UST. According to Mr. Veenbaas, the tank is scheduled to be removed in October 1998.

Aerial photographs dated 1990, 1980, 1965, 1962, 1958, 1955 and 1936 show the subject property occupied by a coal-fired electrical generating plant. No evidence of landfilling was observed in the aerial photographs.

The 1993 Sanborn fire insurance map shows the subject property occupied by ComEd and indicates the boiler house, turbine room, transformer house, switch house, and crib house were all constructed in 1923. The map indicates the synchronous condenser house was built in 1940 and shows a fuel oil room located off the northeast corner of the building. The map did not indicate the construction date of any other on-site buildings.

The 1975 and 1951 Sanborn fire insurance maps show the subject property occupied by ComEd and indicates the boiler house, turbine room, transformer house, switch house, and crib house were all constructed in 1923 and the locomotive house was constructed in 1929. The map indicates the synchronous condenser house was built in 1940 and shows a fuel oil room located below grade off the northeast corner of the building. The map did not indicate the construction date of any other on-site buildings.

The 1919 Sanborn fire insurance map shows the subject property as primarily undeveloped land with the West Fork of the South Branch of the Chicago River located the northern portion of the property running in a northeast to the southwest direction. The map also shows a dwelling in the southwest corner of the subject property.

A USGS Topographic map dated 1993 showed the subject property as it currently exists.

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2.5 Adjacent Site History

Historical information for the subject site vicinity is based on a review of aerial photographs, a topographic quadrangle map, Sanborn fire insurance maps and a Real Estate Map.

The subject property is bordered to the north by W. 33rd Street, beyond which is a vacant industrial building and a residential area. To the east is S. Hamlin Avenue, beyond which is a portion of land owned by ComEd and leased to a trucking firm for the storage of shipping containers, the City of Chicago Sorting Center, and Powell Roofing Contractors. To the south is the Chicago Sanitary & Ship Canal, beyond which is Reliable Asphalt Company and to the west is Pulaski Road, beyond which is a ComEd switchyard and the Highway Freight Center.

Aerial photographs dated 1990 and 1980 show the adjacent properties as

they currently exist. Aerial photographs dated 1965, 1962, 1958, 1955 and 1949 show the subject property bordered to the north by an industrial building, railroad tracks, and a residential area; to the west by an oil refinery; to the south by the Chicago Sanitary & Ship Canal, beyond which were industrial buildings; and to the east by industrial buildings and vacant land.

An aerial photograph dated 1936 shows the subject property bordered to the north by railroad tracks and a residential area; to the south by the Chicago Sanitary & Ship Canal; to the east by vacant land; and to the west by an oil refinery.

A USGS Topographic map dated 1993 showed the adjacent properties as they currently exist.

The 1993 and 1975 Sanborn fire insurance maps show the subject property bordered to the north by the Cerny-Pickas Company Metal Plating facility, C & IW railroad tracks and a residential area; and to the south by the Chicago Sanitary & Ship Canal, beyond which is the Rock Road Construction Company. The map did not show the adjacent properties to the east or west.

The 1951 Sanborn fire insurance maps show the subject property bordered to the north by the Universal Storage Company, C & IW railroad tracks and a residential area; and to the south by the Chicago Sanitary & Ship Canal. The map did not show the adjacent properties to the east or west.

The 1919 Sanborn fire insurance map shows the subject property bordered to the north by Cerny, Pickas & Company and C & IW railroad tracks; and to the south by the Chicago Sanitary & Ship Canal. The map did not show the adjacent properties to the east or west.

A Real Estate Record map dated 1955 provided by ComEd indicated a cinder disposal area was located on the adjacent property directly west of the station's coal pile (currently leased to a trucking company for shipping container storage).

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2.6 Description of Operations

The subject facility is a coal-fired electrical power generating station. Additional operations include wastewater treatment, tractor and other plant maintenance operations. Electrical power is transmitted from the plant to the surrounding metropolitan area through a series of overhead transmission power lines.

The generating station receives coal by barge on the Chicago Sanitary & Ship Canal. Coal is transferred from the barges to a conveyor system that conveys coal to the crusher house. The coal is either conveyed to the coal pile located on the north side of the subject property for storage or fed directly into the plant boilers.

Condenser cooling water is drawn from and returned to the Chicago Sanitary and Ship Canal at a rate of approximately 425 million gallons per day (MGD). Raw boiler make-up water is obtained from City of Chicago municipal water supply. Water treatment chemicals, including ammonia, hydrazine, and phosphate are injected into the boiler make-up water to soften the water and inhibit corrosion and scaling. Sulfuric acid and sodium hydroxide are used to regenerate the demineralizer resins. Sodium hypochlorite is used to treat service water for biofouling control. No chemicals are added to condenser cooling water.

The burning of coal produces waste fly ash and bottom ash. Fly ash is collected in hoppers at the west side of the subject property and sold as construction material by Mineral Solutions, Inc. (MSI). Bottom ash is collected in a slurry and piped to the hydrobins located on the east side of the garbage silos. The bottom ash is decanted to remove water. Wastewater from the decanting bins is pumped to the equalization basins and the remaining bottom ash is sold to MSI for reuse or disposal.

Process wastewater from facility operations is treated on-site and discharged to the Chicago Sanitary & Ship Canal under the conditions of a NPDES permit. The NPDES permit covers discharges from the property including storm water runoff, cooling water, and any other process wastewater. Domestic wastewater is sent to the MWRDGC.

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2.7 Utilities

Currently, the Crawford generating station obtains boiler make-up raw water and potable water from the City of Chicago and process water from the Chicago Sanitary & Ship Canal. Sanitary wastewater and site pavement runoff water is piped off-site to the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC). Natural gas is supplied to the site by NICOR and is used for ignition and main fuel for the Unit 7, Unit 8, and Jet Peakers. The station provides electrical power itself.

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3.0 ENVIRONMENTAL DOCUMENT REVIEW

3.1 Introduction

This environmental document review is based upon an analysis of information provided by ComEd coupled with observations made by Tim Bulthaup and Jeffrey Menter of ENSR during the site visit, which took place on August 18 and August 20, 1998. The information provided by ComEd included documents relative to the various regulatory areas described below. Also, certain computerized U.S. Environmental Protection Agency

(USEPA) enforcement databases were screened.

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3.2 Air Quality

Although no formal emissions inventory was prepared as part of this phase I environmental assessment, a preliminary review of the facility indicates air permits are required for the facility. The Illinois Environmental Protection Agency (IEPA) oversees the state's air permitting compliance programs. The facility currently has four operating permits from the IEPA. According to Ms. Lorinda Lamb of ComEd, the facility has filed an application under the Title V permit program and is currently awaiting approval.

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3.3 Water Resources

The facility is permitted to discharge process wastewater under NPDES Permit No. IL0002186 which was issued April 26, 1995 and expires on April 1, 2000. The permit allows for a total of six discharges including: condenser cooling water, house service water, demineralizer regenerant wastes, boiler blowdown and boiler drain water, recirculating wastewater treatment system blowdown, intake screen backwash and Area 14 runoff (Boiler Room Area). All process wastewater is treated on site prior to being discharged into the Chicago Sanitary & Ship Canal. Domestic wastewater and pavement runoff is discharged to MWRDGC.

A Stormwater Pollution Prevention Plan (SWPPP) has been prepared as a condition of the NPDES permit. The SWPPP describes the best management practices in place at the facility to prevent the release of harmful materials into waters of the state.

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3.4 Oil and Hazardous Materials Storage and Use

3.4.1 Material Storage and Use

Several types of oil and hazardous materials are used on site and include: diesel fuel, fuel oil, coal pile binder, lubricating oil, sulfuric acid, sodium hydroxide, aqueous hydrazine, coal, slag, and scrap metal. Liquid materials are stored in aboveground storage tanks (ASTs), underground storage tanks (USTs), drums, and other containers in outdoor or inside areas. Locations and contents of tanks are described in Section 4.2.

The facility has prepared contingency plans, including a Spill Prevention, Control, and Countermeasures Plan (SPCC) to prevent the discharge of oil from the aforementioned containers, and to mitigate any adverse effects from such a spill.

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3.4.2 Principal Waste Streams

Waste oil from process machinery is placed on the coal pile and burned in the boilers. According to Mr. Veenbaas, this practice is covered under the facility's air permit.

Non-hazardous parts washing solvent from several on-site parts washing units is disposed by Great Northern Processing of East Huntington, Indiana on a monthly basis. Oil-soaked material is disposed by Clean Harbors of Chicago, Illinois on an as-needed basis. Waste Management of Chicago, Illinois disposes general refuse on a weekly basis. Fly ash and wet ash are recycled off site by MSI of Naperville, Illinois. Asbestos-containing materials have been disposed at the Forest Lawn Landfill in Three Oaks, Michigan. Asbestos-containing materials are currently disposed at Envirotech in Morris, Illinois.

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4.0 ON-SITE CONTAMINATION POTENTIAL

4.1 Introduction

Based on ENSR's inspection and review of various documents/files, there is a potential for on-site contamination at the Crawford generating station in Chicago, Illinois. Known and suspect problem areas are discussed below.

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4.2 Above and Underground Storage Tanks

4.2.1 Inventory of Underground Tanks

According to Mr. Veenbaas, one 500-gallon gasoline UST is located on the west side of the subject property. The tank is scheduled to be removed in October 1998. UST Permit No. 104110 was issued by the city of Chicago on July 14, 1998 for the removal of one 500-gallon gasoline UST. Additional information regarding this tank was unavailable for review at the time of ENSR's site investigation.

One 3,900-gallon diesel UST is located directly east of the coal-handling tractor shed. According to Mr. Veenbaas, this tank was installed in the early 1990s. Additional information regarding this tank was unavailable for review at the time of ENSR's site investigation.

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4.2.2 Inventory of Aboveground Storage Tanks

Table 4-1 provides a list of aboveground storage tanks identified at the Crawford Station.

TABLE 4-1

Aboveground Storage Tanks

Crawford Station

TANK TYPE	TANK LOCATION	ESTIMATED CAPACITY (gallons)
Jet Fuel - Oil Tank	East of Jet Peaker Area	750,000
Jet Fuel – Oil Additive Tank	East of Jet Fuel Oil Tank	1,000
Unit #7 – Turbine Oil Tank	Turbine Room Basement under Unit #7	5,410
Unit #8 – Turbine Oil Tank	Turbine Room Basement under Unit #8	6,500
Clean Turbine Oil Tank	West end of Turbine Room Basement	5,500
Clean Turbine Oil Tank	West end of Turbine Room Basement	5,500
Dirty Turbine Oil Tank	West end of Turbine Room Basement	5,500
Dirty Turbine Oil Tank	West end of Turbine Room Basement	5,500
Waste Oil Storage Tank	Hazardous Materials Building	1,000
Waste Oil Storage Tank	Hazardous Materials Building	1,000
Kenetron Room Oil Storage Tank	South side of station on fourth floor of Switch House # 1	2,600
Diesel Tank	Crib House	500
Unknown	Basement of 69 kV Platform	10,000
Unknown	Basement of 69 kV Platform	10,000
Antifreeze	Drive House	275
Antifreeze	Reclaiming Hopper Building	275
Antifreeze	4/5 Junction House	275
Coal Dust Binder	Chemical Mix Building	7,500
Coal Dust Suppressant	Chemical Mix Building	7,500
Coal Dust Surfactant	Chemical Mix Building	1,000
Methylcyclopentedienyl	Additive House	200
Clarifier Tanks	North of waste water treatment plant	2 @ 110,000 each
Sulfuric Acid	East of Turbine Room	10,000
Sodium Hydroxide	East of Turbine Room	10,000
Sodium Hydroxide	WWTP Building	10,000
Demineralized Water Tanks	East Side of Boiler House	2 @ 250,000 each
Dust Suppressant	South side of Switch House for Coal Handling	1 @ 6,000 1 @ 3,000
Unknown	East side basement of Switch House #1	2 @ 70,000 each
Unknown	Basement of Condenser House	2 @ 30,000 each

Water Holding Tanks	Southeast corner of subject property	2 @ 500,000 each
Sodium Hypochlorite	East side of Turbine Room Basement	5,000
Liquid Nitrogen	Unit 8 Stack	190 cubic feet
Aluminum Sulfite	Unit 8 Boiler	2,000
Aluminum Sulfate	Waste water treatment plant	9,000
Carbon Dioxide	Peaker Yard	Unknown
Carbon Dioxide	South of switch house # 1	Unknown
Carbon Dioxide	Basement of Condenser House	Unknown
Gasoline	North of Oil Storage Building	500
Ion Exchange Resin	Demineralizer plant	180 cubic feet
Ion Exchange Resin	Demineralizer plant	180 cubic feet

Many of the ASTs and chemical storage areas were not equipped with secondary containment structures; however, site runoff from these areas is directed to the wastewater treatment plant.

Five abandoned steel tanks were observed in three separate locations of the subject property. Three tanks were observed stored in a grassy area located north of the Synchronous Condenser building; one tank was observed on the east side of the Coal Handling Switch House; and one tank was observed on the west side of the Crusher House. No staining or distressed vegetation was observed in the area beneath any of the tanks.

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4.3 Polychlorinated Biphenyl's (PCBs)

There are numerous liquid-cooled transformers and capacitors on the site. According to Mr. Dave Rubner, ComEd PCB Specialist, the fluid contained within some of the liquid-cooled electrical equipment has been changed with Non-PCB electrolytic fluids. Since the completion of the fluid exchange process, a majority of the equipment was tested for PCB-content, and shown to contain less than 50 ppm PCB. Even though the PCB fluids were removed, small concentrations of PCBs still remained within the transformers and when the Non-PCB fluids were introduced into the transformers, the PCBs slowly leached back into the new fluids. The leaching process resulted in PCB contaminated fluid in three transformers including transformer's 7618, 7617 and 7016709. Additionally, twelve transformers located by the jet peaker house are known to be PCB-contaminated. Evidence of minor staining and/or leaking was observed on or around many of the pad-mounted electrical transformers.

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4.4 Asbestos-Containing Materials

ENSR representatives who are State of Illinois Department of Public Health licensed Asbestos Building Inspectors performed a visual suspect asbestos-containing material (ACM) inspection of the main building and

outlying structures as part of this investigation, however, bulk sampling was not performed. The types and quantities of suspect materials identified during the meticulous walk-through of each on-site structure at the Crawford Station included pipe and pipe fitting insulation, boiler and equipment insulation, tank insulation, pump insulation, vinyl floor tile, suspended ceiling tile, transite panels, transite piping, air heater insulation, hopper insulation and spray-on insulation. Although removal of all ACM is not required at his time, Table 4-2 presents the types and estimated quantities of suspect ACM, as well as estimated removal costs.

TABLE 4-2

Suspect Asbestos-containing Materials

Crawford Station

TYPE OF MATERIAL	ESTIMATED QUANTITY	REMOVAL COST ESTIMATES
Pipe & Pipe Fitting Insulation	74,800 Linear Feet	$1,496,000
Boiler & Equipment Insulation	70,000 Square Feet	$1,750,000
Tank & Pump Insulation	3,400 Square Feet	$77,500
Vinyl Floor Tile	1,000 Square Feet	$5,000
Suspended Ceiling Tile	2,200 Square Feet	$22,000
Transite Panels	229,050 Square Feet	$2,290,500
Transite Piping	900 Linear Feet	$15,000
Air Heater Insulation	78,500 Square Feet	$1,955,000
Hopper Insulation	5,000 Square Feet	$202,500
Spray-on Insulation	3,000 Square Feet	$75,000

The total suspect ACM removal cost is estimated at $7,800,000. The cost estimate is based on ACM location and quantity information provided by ComEd, ENSRS's visual inspection of accessible areas of the facility, and generally accepted ACM removal unit costs. The cost estimate does not include project consulting or reinsulation fees. The estimated removal cost provided above is subject to change as a result of the potential variability in material quantities and locations, contractor fees, disposal fees, and project scheduling. Based on the aforementioned variables, the estimated removal cost may fluctuate as much as 50%.

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4.5 Areas of Staining

The following areas of staining were observed on the subject property

during ENSR's site inspection:

- The former hydrobin area, located in the southwest corner of the subject property, contains a 30-gallon hydraulic oil reservoir that is located in the hydraulic pump room. The reservoir was observed to be leaking at the time of ENSR's site inspection. An approximate ten square foot area of oil staining was observed on the gravel and concrete surface below the reservoir location. This area will be remediated when the equipment is removed in 1999.
- The 69 kV reactor platforms are located directly south of the 69 kV switchyard. An approximate five-foot square area of staining was observed on the gravel surface beneath several of the transformers.
- The coal handling switch house is located directly south of the drive house. A pad-mounted transformer was observed within a fenced in area on the south side of the building. An approximate three-foot square area of staining was observed on the gravel surface beneath the transformer.
- A coal handling tractor maintenance building is located directly southeast of the coal-handling tractor shed. Approximately thirty, 55-gallon drums of various oils, lubricants and antifreezes were observed stored in the building. An approximate twenty-foot square area of staining was observed on the dirt floor beneath some of the drums.
- The coal-handling tractor shed is located east of the coal reclaiming hopper. Approximately twenty, 55-gallon drums of various new and used oils were observed stored inside the building. Minor staining was observed on the dirt floor beneath some of the drums. Additionally, eight 55-gallon drums of new oil were observed stored outside on a concrete pad on the east side of the building. Minor oil staining was observed on the concrete pad beneath the drums.
- The former synchronous condenser house is located east of switch house no. 2. Two 30,000-gallon tanks are located in a vault outside the northeast corner of the building. The basement of the building was flooded at the time of ENSR's site inspection and the vault was inaccessible. An obsolete, pad-mounted transformer is located on the south side of the building. An approximate three-foot square area of oil staining was observed on the gravel surface beneath the transformer. An old metal shed is located on the east side of the building.
- A 750,000-gallon jet fuel oil AST is located northwest of the additive house. The tank is used to store fuel oil for the twelve jet peakers that are located directly west of the tank. An approximate ten-foot square area of staining was observed on the concrete pad at the fill port station located approximately 100 feet southeast of the AST.
- A synthetically lined, oil/water separator pit is located south of the jet

peaker area. The separator receives wastewater from the fuel oil handling area. An approximate ten foot square area of oil staining was observed on the ground that surrounded the separator.

- The synthetically lined wastewater pit (Pit #9) is located directly northeast of the oil/water separator. The pit receives wastewater run off from the oil/water separator prior to it being channeled to the equalization basins. An approximate ten-foot square area of oil staining was observed on the ground that surrounded the pit.
- The former locomotive house is located north of the jet peakers. The building was formerly used to service locomotives that delivered coal to the station. An approximate ten-foot square area of staining was observed on the asphalt surface on the north side of the building.
- The hazardous material storage building is located directly north of the boiler room. The building is divided into two rooms, one room is used to store hazardous and non-hazardous waste. The second room is used to store hazardous chemicals. Approximately fifty, 55-gallon drums of oil-soaked debris and used oil and two, 1,000-gallon used oil ASTs were located in the east room. Substantial staining was observed on the concrete floor in this room. Additionally, an approximate five-foot square area of staining was observed outside on the gravel surface on the north side of the building.
- The oil storage building is located west of the former garbage silos. Approximately 100 55-gallon drums of new oil were observed stored in the building. Minor staining on the concrete floor was observed beneath some of the drums. Additionally, minor staining was observed outside on the gravel surface on the east side of the building.
- Substantial oil staining was observed on the concrete floor beneath the Unit 7 & 8 turbine oil reservoirs in the turbine room basement.
- Substantial oil staining was observed on the concrete floor beneath the Unit 7 & 8 clean and dirty turbine oil tanks in the turbine room basement.
- Substantial oil staining was observed on the concrete floor of the oil storage room adjacent to the Unit 8 elevator.

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4.6 Former USTs

Based on a review of facility documentation and municipal files, the following past and present USTs were listed as being located at the subject property:

- According to municipal records several USTs have been

installed on the subject property. The following is a listing of permits relating to USTs: Permit No. 755604 was issued on June 25, 1992 for the installation of one 4,000-gallon UST; Permit No. 746850 was issued on November 8, 1991 for the installation of an overspill piping monitoring system; Permit No. 693314 was issued on February 7, 1986 for the removal of one 10,000-gallon H_2SO_4 tank in a dike; Permit No. 393543 was issued on October 10, 1967 to inspect a 750,000-gallon jet engine fuel AST; Permit No. 120439 was issued on October 19, 1954 for the installation of one 30,000-gallon fuel oil tank; Permit No. 441362 was issued on April 1, 1953 for the replacement of one 2,000-gallon tank with one 1,000-gallon tank and one 3,000-gallon diesel oil tank; and Permit No. 101129 was issued on August 3, 1994 for the removal of one 10,000-gallon tank. Additional documentation regarding these tanks, their former locations, and information regarding their installations and removals was unavailable for review at the time of ENSR's site investigation.

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4.7 Adjacent Property

According to the 1975 and 1993 Sanborn fire insurance maps, a metal plating facility was located on the adjacent property to the north. The disposal practices of oils, degreasing solvents and plating chemicals from this property are unknown. It is unknown if improper waste disposal methods conducted at that site could impact the subject property (See Section 4.9.2 for additional information on this property).

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4.8 Spill History

Based on a review of the Com Ed's spills file, the following spills have been reported at the subject property:

- On August 26, 1994 a contractor hit a pipe containing non-PCB cable oil. Approximately 1,000-gallons of material was recovered and surface and/or water was not reported to have been impacted
- On October 21, 1992, an unregistered 3,000-gallon UST was removed from the site. Approximately 30 gallons of fuel oil was spilled during the removal process, which resulted in an approximate 100 square foot area of stained soil.
- On October 19, 1992, an unregistered 1,500-gallon UST was removed from the site. Approximately 20 gallons of fuel oil was spilled which resulted in an approximate 5 square foot area of

stained soil.

On April 13, 1993 the IEPA approved ComEd's request for site-specific clean-up objectives related to the LUST incidents reported above.

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4.9 Environmental Database Report

ENSR reviewed a variety of federal and state governmental databases using Environmental Data Resources (EDR) of Southport, Connecticut. The following federal and state contamination-related databases were searched for the subject property and the area surrounding the subject property; the various search distances used are also noted:

TABLE 4-3

Databases Searched and Radii

Database Acronym	Description	Search Distance1 (miles)
	Federal Databases	
NPL2	Existing and proposed Superfund sites on the National Priorities List	1.0
CERCLIS2	Abandoned, uncontrolled or inactive hazardous waste sites reported to the U.S. EPA, which have been or are scheduled to be investigated by the U.S. EPA for potential nomination to the NPL.	0.5
RCRIS-TSD2	Reported sites that treat, store and/or dispose of hazardous waste and subject to the federal RCRA regulations.	0.5
RCRIS-LQG/SQG2	Reported large-quantity generators and small quantity generators of hazardous waste.	0.25
ERNS2	Sites reporting spills to the U.S. EPA and/or the U.S. Coast Guard under various federal regulations	target property
FINDS	Facility Index System indicates the presence of a site on another federal database.	target property
PADS	PCB Activity Database System identifies generators, transporters, commercial storers and/or brokers and disposers of PCBs who are required and have notified the EPA of such activities.	target property
RAATS	RCRA Administrative Tracking System contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA.	target property
TRIS	Toxic Chemical Release Inventory System identified facilities who have reported releases of listed toxic chemicals to the air, water, and land in reportable quantities under SARA Title III Section 313.	target property
TSCA	Toxic Substances Control Act identified manufacturers and importers of chemical substances by plant site in 1986. No updates of the list have been made by EPA.	target property
HMIRS	Hazardous Materials Information Reporting System contains hazardous material spill incidents reported to the Federal DOT.	target property
NPL Liens	List of liens placed against real property in order for the EPA to recover remedial action expenditures or when the property owner receives notification of potential liability.	target property
CORRACTS	Corrective Action Report identifies hazardous waste	1.0

	handlers with RCRA corrective action activity.	
ROD	Records of Decision mandating a permanent remedy for a Superfund Site	1.0
MLTS	Material Licensing Tracking System, maintained by the Nuclear Regulatory Commission, contains a list of sites that possess or use radioactive materials and are subject to NRC licensing.	target property
Delisted NPL	Sites removed from the NPL	target property
Coal Gas	Former manufactured coal gas sites	1.0
Illinois Databases		
SHWS2	State hazardous waste sites	1.0
UST2	Sites which have reported underground storage tanks.	0.5
LUST2	Sites which have reported leaking underground storage tanks.	0.5
SWF/LF2	List of permitted solid waste disposal facilities	0.5
1 The radial search distances used equal or exceed those recommended by ASTM for assessing the environmental condition of commercial real estate. which are required to be searched by ASTM.		

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4.9.1 Subject Property

According to the EDR database report, the subject property is listed on the FINDS, RCRIS-LQG, UST and ERNS databases. According to the EDR report the facility is registered as a large quantity generator of hazardous waste under IEPA ID Number ILD044231470. The facility is also listed as having an active waste water discharge permit; as being permitted for air emissions under the Clean Air Act (CAA); and as having civil judicial and administrative enforcement cases against the facility. Information regarding the civil judicial and/or administrative enforcement cases against the facility was unavailable for review at the time of ENSR's site investigation.

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4.9.2 Surrounding Land Uses

According to the EDR database report, several sites were identified within the specified search radius and are summarized in Table 4-4.

TABLE 4-4

EDR Database Summary

Crawford Station

Site	Database	Distance (miles)	Direction	Location Relative to Inferred Hydraulic Gradient at Site
Willett Trucking 3400 S. Pulaski Road	LUST, UST	Adjacent	West	Parallel gradient

ALT ★ HOLD SCAN, keep at RIC

Chicago, Illinois				
NU Temp 3348 S. Pulaski Road Chicago, Illinois	RCRIS-SQG, FINDS, UST, LUST	Adjacent	West	Parallel gradient
Edgcomb Metals 3348 S. Pulaski Road Chicago, Illinois	RCRIS-SQG, FINDS	Adjacent	West	Parallel gradient
Double A Metals 3321 S. Pulaski Road Chicago, Illinois	CERCLIS, FINDS, RCRIS-LQG	Adjacent	North	Up gradient
Dongary Investments 4200 W. 35th Street Chicago, Illinois	LUST	1/4-1/2	North	Up gradient
Kerr McGee Ref Triangle 3741 S. Pulaski Road Chicago, Illinois	LUST	1/4-1/2	South	Down gradient
M.W. Powell Company 3445 Lawndale Avenue Chicago, Illinois	LUST	¼-1/2	East, northeast	Parallel gradient
F.A.B. Transport 3401 S. Lawndale Avenue Chicago, Illinois	LUST	¼-1/2	East, northeast	Parallel gradient
Dongary Investments, Inc. 4300 W. 35th Street Chicago, Illinois	RCRIS-SQG, FINDS, LUST	¼-1/2	West	Parallel gradient
Arthur Nelson Estate 3905 S. Pulaski Road Chicago, Illinois	LUST	¼-1/2	South	Down gradient
Peoples Gas Light and Coke 4400 Block of W. 31st Street Chicago, Illinois	Coal Gas	½-1	West, northwest	Parallel gradient
Westinghouse Electric Corporation				

3900 W. 41st Street Chicago, Illinois	RCRIS-SQG, SHWS	½-1	South	Down gradient
Peoples Gas Light and Coke By products Plant South of W. 35th Street Cicero, Illinois	Coal Gas	½-1	West	Parallel gradient

Based on their hydrogeologic gradient relative to the subject property, none of the above-listed sites are likely to have impacted the subject property with the exception of the following:

- Willett Trucking, located adjacent to the west and hydrogeologically parallel gradient relative to the subject property, is listed on the LUST and UST databases. No additional information was contained within the EDR regarding the site. Based on its close proximity, this site could potentially impact the subject property.

- Nu Temp, located adjacent to the west and hydrogeologically parallel gradient relative to the subject property, is listed on the RCRIS-SQG, FINDS, LUST and UST databases. No additional information was contained within the EDR regarding the site. Based on its close proximity and hydrogeologic gradient, this site could potentially impact the subject property.

- Double A Metals, located adjacent to the north and hydrogeologically up gradient relative to the subject property, is listed on the CERCLIS, RCRIS-LQG and FINDS databases. According to the EDR report, the facility is an abandoned aluminum smelter and foundry containing waste piles of drummed solvents and compressed gas cylinders. The Discovery Assessment was completed on September 30, 1996 and the Removal Assessment was completed on April 16, 1997. The CERCLIS Site Status is listed as "Not Reported". No additional information was contained within the EDR regarding the CERCLIS status.

- The Double A Metals facility is listed as a hazardous waste generator. A Compliance Evaluation Inspection

completed on December 12, 1993 indicated that the facility was in violation of generator requirements. The facility was permitted for air emissions under the Clean Air Act and there is a civil judicial and administrative enforcement case against the facility. Based on its close proximity and hydrogeologic gradient, this site could potentially impact the subject property.

- Dongary Investments, located ¼-1/2 mile north and hydrogeologically parallel gradient relative to the subject property, is listed on the LUST database. No additional information was contained within the EDR regarding the site. Based on its close proximity and hydrogeologic gradient, this site could potentially impact the subject property.

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5.0 SUMMARY OF FINDINGS

ENSR performed a Phase I Environmental Assessment in conformance with the scope and limitations of the ASTM Practice E 1527-97 of ComEd's Crawford Generating Station, located at 3501 S. Pulaski Road, Chicago, Illinois. Any exceptions to, or deletions from this practice are described in this report. This practice has revealed the following evidence of recognized environmental conditions in connection with the property:

- Staining: Several areas of staining were observed throughout the subject property (see Section 4.5 for a detailed listing of stained areas). Staining was primarily observed around drums, ASTs, and transformers.

- Suspect ACM: Suspect asbestos-containing pipe insulation, spray-on fireproofing, transite panels, transite piping, tank insulation, boiler insulation, hopper insulation, air heater insulation, ceiling and floor tile were observed throughout the site buildings.

- PCBs: Three electrical transformers (#7618, #7617, and #7016709) are classified as having PCB leachback potential due to failed retrofits conducted in the 1980s.

- Current USTs: One 500-gallon gasoline UST and one 3,900-diesel fuel are located on the subject property. The 500-gallon UST is scheduled to be removed in October, 1998. The diesel fuel tank information was unavailable for review, it is unknown if the tank is up-to-date with all current UST requirements.

- Former USTs: Several USTs have been installed and removed from the subject property since 1923. Since documentation regarding condition of these tanks upon removal was unavailable for review, it is unclear if they impacted soil and/or groundwater quality.

- ASTs: Five abandoned steel tanks were observed in three separate locations of the subject property. Three tanks were observed stored in a grassy area located north of the Synchronous Condenser building; one tank was observed on the east side of the Coal Handling Switch House; and one tank was observed on the west side of the Crusher House. No staining or distressed vegetation was observed in the area beneath any of the tanks.

- Adjacent Properties: According to the 1975 and 1993 Sanborn fire insurance maps, a metal plating facility was located on the adjacent property to the north. The disposal practices of oils, degreasing solvents and plating chemicals from this property are unknown. This facility was also identified on the EDR report as a CERCLIS site. It is presently unknown if the past facility operations have impacted the subject property.

  Three adjacent properties were identified on the LUST database. These properties include Willett Trucking, Nu Temp and Dongary Investments. It is presently unknown if contamination associated with these facilities has impacted the subject property.

  A Real Estate Record map dated 1955 provided by ComEd indicated a cinder disposal area was located on the adjacent property directly west of the coal pile (currently leased to a trucking company for storage container).

- Spill History: Three reported spills have occurred on the subject property (See section 4.7 for a detailed listing of spills).

- Switchyard: Although the switchyards were not inspected as a part of

this environmental assessment, historically PCB-containing fluids were likely used in the equipment. It is unknown whether or not the equipment has leaked fluid over time which may have impacted the subject property.

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6.0 REFERENCES

6.1 Persons Interviewed or Contacted

Mr. Fred Veenbass, Compliance Specialist, ComEd Crawford Generating Station, 3501 S. Pulaski Road, Chicago, Illinois. (773) 247-7272.

Ms. Lorinda Lamb, ComEd Company, One First National Plaza, 10 South Dearborn, 35 FNW, Chicago, Illinois. (312) 394-4438.

Mr. Dave Rubner, ComEd PCB Specialist, One First National Plaza, 10 South Dearborn, 35 FNW, Chicago, Illinois. (312) 394-4461.

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6.2 Documents and Reports Reviewed

City of Chicago Building Department records for 3501 S. Pulaski Road, Chicago, Illinois.

City of Chicago, Department of Environment records for 3501 S. Pulaski Road, Chicago, Illinois.

Aerial Photographs of subject property and surrounding properties dated 1990 and 1980 reviewed at the University of Illinois, Chicago Library, Chicago, Illinois.

Aerial Photographs of subject property and surrounding properties dated 1965, 1962, 1958, 1955 and 1938 reviewed at the Chicago Historical Society, Chicago, Illinois.

EDR Radius Map with Geocheck, ComEd Crawford Station, 3501 S. Pulaski Road, Chicago, Illinois, dated August 18, 1998.

EDR Sanborn™ maps dated 1993, 1975, 1951 and 1919, ComEd Crawford Station, 3501 S. Pulaski Road, Chicago, Illinois, dated August 18, 1998.

U.S.G.S. 7.5-minute Topographical Quadrangle Map, Englewood, Illinois, dated 1993.

Real Estate Map, ComEd Crawford Station, dated 1955, provided by ComEd.

Certificate of Survey Map, ComEd Crawford Station, dated 1996, provided by ComEd.

SPCC Plan, ComEd Crawford Station, dated November 11, 1994, provided by ComEd.

Industrial Waste Generation and Disposal Reports for 1998, ComEd Crawford Station, provided by ComEd.

Tier II Inventory Forms for 1997, dated February 27, 1998, ComEd Crawford Station, provided by ComEd.

NPDES Permit No. IL0002186, ComEd Crawford Station, provided by ComEd.

Spill Log Review, 1986-1998, ComEd Crawford Station, provided by ComEd.

ComEd document review relating to Hazardous Waste, Acid Rain Permits, Wetlands, Air Operating Permits, NPDES Permits, Tier II Reports, and Storm water, performed at One First National Plaza, 10 South Dearborn, 35 FNW, Chicago, Illinois.

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7.0 SIGNATURES AND QUALITY CONTROL REVIEW

BY: _____
Timothy E. Bulthaup, M.S., CHMM
TITLE: Project Specialist
DATE: _____

QUALITY CONTROL REVIEW
BY: _____
Aaron B. Gesin
TITLE: Program Manager
DATE: _____

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